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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,208	05/14/2001	Nanette C. Jensen	10013325-1	9811

7590 05/17/2006

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EXAMINER
WEST, JEFFREY R

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding..

09/855-208

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.

EXAMINER

ART UNIT	PAPER
	20051220

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

DETAILED ACTION

Response to Reply Brief

1. The reply brief filed November 08, 2005, has been entered and considered. The application has been forwarded to the Board of Patent Appeals and Interferences for decision on the appeal.

2. The Following arguments are also noted:

Appellant first argues:

> "Applicant has not stated that the designers 'provide a known saturation to prevent the saturation level from being reached' as stated above. Rather, Applicants stated that the saturation level of a sensor is known and the compensation circuitry is designed to avoid the saturation of the sensor. Applicants assert that this is inherent in the discussion of *Gamgee*."

The Examiner maintains that Appellant specifically stated in the Appeal Brief:

> "Gamgee merely teaches the use of a compensating circuit so that operating point of the sensor is adjusted so as to prevent saturation. The compensating circuit is the subject of design before the circuit is constructed. In this respect, designers prevent the sensor from becoming saturated with the compensation circuit. There is no circuitry in Gamgee that actively detects the saturation level itself. Rather, at design time the saturation level of the sensor is known by the designers and circuitry is generated to prevent such from happening."

The Examiner maintains that the interpretation by Appellant is not described or inherent in the disclosure of Gamgee. In fact, Gamgee specifically states:

"the sensing means being operable to generate an output signal of a magnitude related to the incident radiation up to a saturation level of the output signal, and increase in incident radiation level beyond a radiation level necessary to produce said saturation level do not produce significant changes in magnitude of the output sensing signal, the discriminating apparatus being operative over a range of radiation background signal intensities which can be sufficient to cause the output signal to reach the saturation level without adjustment of the operating point of the

sensing means, the discriminating apparatus including a compensating circuit operative in response to any variation in background radiation[ ]intensity level within a desired range to adjust the operating point of the incident radiation sensing means so as to maintain the level of the sensing signal below the saturation level" (column 1, line 61 to column 2, line 10).

This section of Gamgee explicitly indicates that the apparatus is operative "to cause the output signal to reach the saturation level" and indicates that once this saturation level is detected, the compensating circuit will then be operative to maintain the signal below the saturation level.

Appellant then indicates,

> "Applicant wish to draw attention to the primary portions of the excerpt quoted from *Gamgee* by the Examiner above as follows:
> "The sensing means being operable to generate an output signal of a magnitude related to the incident ***radiation up to a saturation level of the output signal***, ...the discriminating apparatus including a compensating circuit ***operative in response to any variation in background radiation intensity level*** within a desired range to adjust the operating point of the incident radiation sensing means **so as to maintain the level of sensing signal below the saturation level**...' (*Gamgee*, Column 3, lines 5-16).
> The Examiner misinterprets the above statements as describing the detection of saturation and then operating the circuit once saturation is detected. However, the above-cited section of *Gamgee* simply states that the sensing means generates an output signal that varies in magnitude in response to the intensity of the incident radiation up to the saturation level of the sensor. In this respect, *Gamgee* merely points out that circuits operate and have levels of saturation, which is described in the present patent application."

The Examiner first asserts that the indication that the sensing means is operable "to generate an output signal of a magnitude related to the incident radiation up to a saturation level of the output signal" indicates that the sensor does reach saturation

since the output signal is related to the incident radiation up to such a saturation level. The output signal is only related to the incident radiation "up to" a saturation level of the output signal because any additional incident radiation past such a saturation level does not produce a corresponding related output signal since saturation has occurred and the output cannot respond as expected after reaching the saturation level.

The Examiner also asserts that the sections of the above-cited passage which Application has not cited states, "the discriminating apparatus being operative over a range of radiation background signal intensities which can be sufficient to cause the output signal to reach the saturation level without adjustment of the operating point of the sensing means", thereby also indicating that the saturation level is reached.

Appellant also argues:

> "In addition, the Examiner stated that the section of *Gamgee* explicitly indicates that the apparatus is operative 'to cause the output signal to reach the saturation level' and indicates that once this saturation level is 'detected', the compensating circuit will then be operative to maintain the signal below the saturation level.' (Examiner's Answer, page 9.) The Examiner takes the simple description of limits to the operation of circuit as indicating that the saturation level is 'detected' as set forth in the claims. However, Gamgee merely acknowledges that circuits become saturated once the signal ranges move beyond their window or operation.
>
> The Examiner implies that somehow once signals are 'detected', then the compensating circuit operates to maintain the signal below the saturation level. However, this is a distortion of the actual teachings of *Gamgee*. Specifically, the compensating circuit described by *Gamgee* operates in response to variation in background radiation intensity level. This reflects the fact that the radiation that falls incident to the senor of *Gamgee* includes an information signal component and an unwanted background radiation component that results from ambient light, etc. (i.e. see *Gamgee*, Column 1, lines 28-46)."

The Examiner maintains, for reasons similar to that provided above, that Gamgee supports the Examiner's position that the apparatus is operative to cause the output signal to reach the saturation level, specifically:

> "the sensing means being operable to generate an output signal of a magnitude related to the incident radiation up to a saturation level of the output signal, and increase in incident radiation level beyond a radiation level necessary to produce said saturation level do not produce significant changes in magnitude of the output sensing signal, the discriminating apparatus being operative over a range of radiation background signal intensities which can be sufficient to cause the output signal to reach the saturation level without adjustment of the operating point of the sensing means, the discriminating apparatus including a compensating circuit operative in response to any variation in background radiation[ ]intensity level within a desired range to adjust the operating point of the incident radiation sensing means so as to maintain the level of the sensing signal below the saturation level" (column 1, line 61 to column 2, line 10).

This section of Gamgee explicitly indicates that the sensing means is operative "to generate an output signal of a magnitude related to the incident radiation up to a saturation level of the output signal" wherein "increase in incident radiation level beyond a radiation level necessary to produce said saturation level do not produce significant changes in magnitude of the output sensing signal" as well as a discriminating apparatus operative "to cause the output signal to reach the saturation level".

The Examiner also maintains that the invention of Gamgee teaches a method for detecting saturation wherein a "sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21" thereby describing that saturation is achieved as

indicated by the detection of an increase in incident radiation that does not produce significant changes in output.

Appellant then cites several portions of Gamgee (column 1, lines 17-23 and 35-42 and column 3, lines 17-33) and argues:

> "the compensating circuit 26 does not detect the saturation level as assumed by the Examiner, rather it simply allows the system to distinguish between an information signal component and a variable background component of an input signal generated from incident background radiation. In this respect, the compensating circuit does not detect saturation; it merely is designed to allow the circuits to operate such that the background light that falls upon the sensor does not cause the ultimate circuit to be saturated."

Appellant then argues,

> "The Examiner's statement that *Gamgee* 'teaches a method for detecting saturation' simply reads far too much into the above quoted statement from *Gamgee*. Specifically, *Gamgee* merely states that 'the output of a sensor varies with the intensity of incident radiation level up to a point that the sensor is saturated. In addition, the statement merely indicates that once saturation of a sensor is reached, then the incident radiation levels that change to not ultimately change the output of the sensor.
>
> However, the mere statement that sensors saturate does not show or suggest active detection of such saturation levels. In addition, *Gamgee* is completely silent with respect to the fact that the saturation levels of sensors can vary over time. Active detection of the saturation level of sensors according to the various embodiments of the present invention make sure that sensors are operating in a useful range and do not become saturated during scanning functions thereby rendering imperfect scans. In fact, in the present specification, sensors may be eliminated from consideration entirely if saturation cannot be avoided, as the sensors become defective over time."

The Examiner asserts that the cited section of Gamgee does more than just indicate that the sensors saturate and instead does suggest active saturation detection in that the disclosure describes the saturation detection with respect to

actual outputs sensed, specifically, "sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21."

With respect to the argument that "Gamgee is completely silent with respect to the fact that the saturation levels of sensors can vary over time", Appellant has not indicated as to which claimed limitations require teaching this feature. Further, the Examiner maintains that in the invention of Gamgee the saturation point is detected by determining a saturation level "beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21." Therefore, each time the output signal is monitored for determining when a significant change is not produced, a new saturation level may be determined.

Appellant then argues:

> "The Examiner than states:
> 'This section of Gamgee first indicates that the sensing means generates a first output signal related to a first incident radiation by stating that 'in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level' is produced.' (Examiner's Answer, page 10.)
>
> The fact that the sensors of *Gamgee* generate an output is of no consequence. All sensors generate outputs. However, the Examiner then states:
> 'This section of Gamgee then discloses that the sensing means generates a second output and a plurality of subsequent output signals, related to a second incident radiation and a plurality of subsequent incident radiations,

> and repeats the process up until a saturation level is detection [sic], specifically, by generating a plurality of output signals in response to the plurality of input radiations 'up to a saturation level of the output signal.' (Examiner's Answer, page 10.)

> The statement of the Examiner that *Gamgee* then discloses 'that the sensing means generates a second output and a plurality of output signals, related to a second incident radiation and a plurality of subsequent incident radiations and repeats the process up until a saturation level is detected' is simply incorrect. *Gamgee* simply employs a light sensor that receives incident light and generates a signal therefrom, this signal having two components, mainly an information signal component and an unwanted background component. The compensating circuit minimizes or eliminates the effect of the background light so that the circuitry, thereby discriminating between the information signal component and the background component.

The Examiner first asserts that the teaching of the "sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21" does more than simply indicate that sensors generate output. This section of Gamgee first indicates that the sensing means generates a first output signal related to a first incident radiation by stating that "in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level" is produced.

The Examiner also maintains that this section of Gamgee does more than just employ "a light sensor that receives incident light and generates a signal therefrom, this signal having two components, mainly an information signal component and an unwanted background component". By generating "in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a

saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21", Gamgee is disclosing that the sensing means generates a output signals, related to incident radiations, "up to a saturation level of the output signal" which is determined by detecting saturation when "any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal".

Appellant then argues:

> "The statement that *Gamgee* 'repeats the process up until a saturation level is detection' is simply incorrect. *Gamgee* does not teach taking repeated measurements of radiation as the Examiner contends. Also, since the compensating circuit of *Gamgee* operates to minimize or eliminate the effect of background light, the sensor can operate within normal parameters without saturation as described. There is no need to detect saturation as the circuit is designed to avoid it. Also, as Applicants have stated above, it might be the case that the desired information signal itself may saturation the circuit due to drifting saturation levels over time. *Gamgee* does not address this potential problem."

As noted above, the Examiner maintains that Gamgee is disclosing that the sensing means generates output signals, related to incident radiations, until a saturation level is detected, specifically, by generating output signals in response to the input radiations "up to a saturation level of the output signal" which is determined by detecting saturation when "any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal".

With respect to the argument that Gamgee does not address the drifting of saturation levels, Appellant has not indicated as to which claimed limitations require

teaching this feature. Further, the Examiner maintains that in the invention of Gamgee the saturation point is detected by determining a saturation level "beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21." Therefore, each time the output signal is monitored for determining when a significant change is not produced, a new saturation level may be determined, thereby accounting for drift.

Appellant then asserts "that no where does *Gamgee* disclose that the saturation level is detected by determining the difference between first and second incident radiation levels. The discriminating circuit of *Gamgee* allows two different components of a given incident radiation signal to be differentiated. Claims that *Gamgee* actually describes detecting the saturation level as set forth above simply represents an unreasonable extension of the teachings of *Gamgee*."

Also, in response to the Examiner assertion that "in order to determine whether the difference between the magnitudes of the first and second output signals is/is not significant, it is considered inherent that the difference must be compared to some type of threshold to indicate that the difference is/is not significant since in order to determine the significance of the difference, some measure of significance must be provided as a reference for comparison (i.e. a threshold)", Appellant states that "[t]here is no comparison of the difference between measurements of light with thresholds. Such is not inherent since the circuit described avoids saturation in the first place. Once the circuit is designed, there is no need to perform differences."

The Examiner again asserts that Gamgee's disclosure that "sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21" discloses that the saturation level is detected by determining when a difference between the first and second incident radiation levels does not produce a significant difference between the magnitudes of the first and second output signals, specifically, by determining when "beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21" (i.e. there is no significant difference between two sequential output signal magnitudes).

The Examiner also maintains that in order to determine whether the difference between the magnitudes of the first and second output signals is/is not significant, it is considered inherent that the difference must be compared to some type of threshold to indicate that the difference is/is not significant since in order to determine the significance of the difference, some measure of significance must be provided as a reference for comparison (i.e. a threshold).

Therefore, it can be seen that Gamgee does teach detecting saturation by comparing the difference a between a first measure of light output and a second measure of light output with a predetermined significance threshold. This teaching

of Gamgee is consistent with the common means for detecting saturation in that it applies steadily increasing inputs to a sensor each time comparing a difference in the outputs of the sensor with a threshold to determine when the difference in output does not correspond an expected difference. This point in which the difference in output does not correspond to an expected difference threshold is the saturation point since a saturated sensor is at a maximum allowable input and cannot correctly respond to an additional increase in input.

Appellant then argues:

> "The Examiner further states that *Gamgee* thus does not teach away from the current invention as claimed. However, Applicants asserts that given that the compensating circuit of *Gamgee* avoids saturation altogether by design rather than detecting a saturation level as claimed in the present application, then Applicant maintains the position that *Gamgee* teaches away from the present claimed invention. *Gamgee* does not event take into account whether the information signal component that strikes the photosensor might actually still saturate the senor given that the saturation level of the sensor may vary over time.
>
> Thus, *Gamgee* does in fact teach away from trying to detect the saturation level as set forth by the claims of the present invention as it necessarily implies that saturation levels of sensors do not change over time. Specifically, compensation for the background light is all that is addressed. Thus, Applicants assert that again *Gamgee* teaches away from the invention as claimed."

The Examiner asserts that this argument is not considered to be persuasive since the Gamgee does disclose sensor saturation in the disclosures of "the sensing means being operable to generate an output signal of a magnitude related to the incident radiation up to a saturation level of the output signal, and increase in incident radiation level beyond a radiation level necessary to produce

said saturation level do not produce significant changes in magnitude of the output sensing signal, the discriminating apparatus being operative over a range of radiation background signal intensities which can be sufficient to cause the output signal to reach the saturation level without adjustment of the operating point of the sensing means, the discriminating apparatus including a compensating circuit operative in response to any variation in background radiation[ ]intensity level within a desired range to adjust the operating point of the incident radiation sensing means so as to maintain the level of the sensing signal below the saturation level" (column 1, line 61 to column 2, line 10) and "sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21."

Appellant then asserts:

> "that one skilled in the art at the time the invention was made would not understand *Gamgee* as teaching all of the elements as set forth by the Examiner in the various rejections above to which this Appeal is made. It is the unreasonable interpretation by the Examiner that is necessarily based on hindsight since one skilled in the art without knowledge of the claims of the present patent application could never appreciate *Gamgee* as teaching all of the elements of the claims of the present application as set forth by the Examiner."

The Examiner asserts that hindsight is analyzed with respect to a judgment of obviousness and does not pertain to Appellant's indication that "one skilled in the art without knowledge of the claims of the present patent application could never

appreciate *Gamgee* as teaching all of the elements of the claims of the present application as set forth by the Examiner."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrw
April 18, 2006

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